

March 3, 2014



U.S. Department
of Transportation

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

DOT-SP 10646
(FOURTEENTH REVISION)

EXPIRATION DATE: February 28, 2018

(FOR RENEWAL, SEE 49 CFR §107.109)

1. GRANTEE: Schlumberger Technologies Corporation
Sugar Land, Texas
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the transportation in commerce of flammable gases in a non-DOT specification cylinder. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
 - b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce.
 - c. No party status will be granted to this special permit.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302a(a) and 173.304a(a) in that a non-DOT-specification cylinder is not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Schlumberger dated February 6, 2014, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Compressed gas, toxic, flammable, n.o.s. Inhalation hazard Zone B*	2.3	UN1953	N/A
Hydrocarbon gas mixture, compressed, n.o.s.	2.1	UN1964	N/A
Hydrocarbon gas mixture, liquefied, n.o.s.	2.1	UN1965	N/A
Hydrogen sulfide	2.3	UN1053	N/A
Petroleum gases, liquefied or Liquefied petroleum gas	2.1	UN1075	N/A
Liquid gas, flammable, n.o.s.	2.1	UN3161	N/A

*Applicable parts of §173.40 must be complied with when transporting this material

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is an oil well sampling cylinder, threaded on both ends, with a design pressure of 20,000 psig for H433947F-AY assembly and 25,000 psig for 100501648D-AD assembly. Each cylinder must comply with the design calculations, drawings, material and engineering specifications submitted with Schlumberger's application on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). The cylinders must be in conformance with DOT 3A specification (§178.35 and §178.36) except as follows:

§ 178.35(e) *Safety devices*

The cylinder assembly need not be fitted with a safety relief device. However, when subjected to pool fire the Teflon seals used in the assembly must fail and provide adequate venting with a start to discharge pressure not exceeding hydrostatic test pressure.

§ 178.35(f) *Marking*

Applies, except that cylinders must be marked "DOT-SP 10646" in place of "DOT-3A" and the size of the marking must be at least 3/16 inches high and clearly visible.

§ 178.36(b) *Steel*

The authorized materials of construction are the following:

For the H433947F-AY assembly, the cylinder material is Inconel 718 per material specification SH400198-AF, and the split threaded rings material is Monel K-500 per material specification 100248736-AH.

For the 100501648D-AD assembly, the cylinder material is MP35N per material specification 100067004-AD, and the split threaded rings material is Toughmet per material specification CMS-Z691J.0-AD.

For the Head ends of the cylinder, both assemblies use Titanium Beta-C per material specification SH708280-AD.

All materials must meet the requirements of the National Association of Corrosion Engineers (NACE) specification MR-01-75 for suitability in hydrogen sulfide (H₂S) service.

§ 178.36(d) *Manufacture*

Cylinders must be manufactured using equipment and processes adequate to ensure that each cylinder produced conforms to the requirements of this special permit. Material stock must be inspected to assure cleanliness and be free of defects that are likely to weaken the finished cylinder. The final dimensions of the finished cylinder must conform to Schlumberger drawing H433920F-AR for H433947F assembly, and drawing 100335494D-AD for assembly drawing 100501648D on file with the OHMSPA.

§ 178.36(f) *Wall thickness*

Minimum wall thickness for the cylinder may not be less than 0.324 inches.

§ 178.36(g) *Heat treatment*

The completed cylinder need not be heat treated. However, the heat treatment of the purchased stock material must conform to the appropriate Schlumberger Engineering Specifications; SH400198-AF for Inconel 718 and 100067004-AD for MP35N. Passivation surface treatment is not required but may be added to the Inconel, Titanium, and MP35N parts. If added, Passivation must conform to Schlumberger Engineering Specification 100251381-AB on file with the OHMSPA.

§ 178.36(k) *Physical tests*

Physical tests will be performed in accordance with Schlumberger Engineering Specification EH433570-AE on file with the OHMSPA.

§ 178.36(l) *Acceptable results for physical tests*

- (1) For Inconel 718 bar stock used for cylinder:
Tensile strength: 175,000 psi minimum
Yield strength: 125,000 psi minimum
Elongation: 20% on 1 inch gage specimen
- (2) For Titanium Beta-C bar stock used for heads:
Tensile strength: 175,000 psi minimum
Yield strength: 165,000 psi minimum
Elongation: 5% on a 1 inch gage specimen
- (3) For Monel K-500bar stock used for threaded rings:
Tensile strength: 140,000 psi minimum
Yield strength: 100,000 psi minimum
Elongation: 17% on a 1 inch gage specimen
- (4) For MP35N bar stock used for cylinder:
Tensile strength: 190,000 psi minimum
Yield strength: 180,000 psi minimum
Elongation: 10% on 2 inch gage specimen
- (5) For Toughmet bar stock used for threaded rings:
Tensile strength: 125,000 psi minimum
Yield strength: 110,000 psi minimum
Elongation: 10% on 1 inch gage specimen

All other physical test results must conform to the values specified in Schlumberger Material Specifications; SH400198-AF, 100067004-AD, SH708280-AD, 100248736-AH and CMS-Z691J.0-AD as applicable and on file with the OHMSPA.

b. TESTING - Each cylinder must be reinspected and hydrostatically retested every five years in accordance with § 180.209, as prescribed for DOT 3A specification cylinders. Reheat treatment or repair of rejected cylinders is not authorized. When a hydrostatic retest of a cylinder is performed due to equipment failure as authorized in §180.205(g)(5), only two such retests are permitted.

c. OPERATIONAL CONTROLS - Each cylinder must be packed in strong outside packaging. The shipping container as shown in the Schlumberger drawing number H708301F-AC is authorized for two cylinders.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modifications or changes are made to the package and it is reoffered for transportation in conformance with this special permit and the HMR.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

c. Test reports: The test reports required under this special permit must be retained by the manufacturer as long as the cylinders made under this special permit are authorized, and must be made available to an authorized DOT representative upon request.

d. The cylinders are authorized for oil well sampling service only.

e. Transportation of Division 2.1 (flammable gases) are not authorized aboard cargo vessel or aircraft unless authorized in the Hazardous Materials Table (§ 172.101).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only.

March 3, 2014

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel or aircraft used to transport packages covered by this special permit. The shipper must furnish a copy of this special permit to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
 - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
 - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
 - o Registration required by §107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) - The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: Shafkey:dl